Crosby Response Air Monitoring Plan

Crosby, Texas

Prepared For:

Arkema

c/O Andrew Becker

Manager, Occupational Risk Assessment

900 First Avenue

King of Prussia, PA 19406-0936

Prepared by:

Bureau Veritas North America

September 1, 2017

7058026

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LIMITATIONS/DISCLAIMER

This Crosby Response Air Monitoring Plan has been prepared on behalf of Arkema with specific application to response to current conditions at the facility.

Changes in site use and conditions may occur due to nature, manmade changes, or variations in environmental or other factors. Additional information which was not available to BVNA at the time this plan was prepared or changes which may occur at the site or in the surrounding area may result in modification of this plan.

This plan, dated 1 September 2017 has been prepared and reviewed by the following:

Prepared by:

Spencer Pizzani, CIH (CP 10339)
Industrial Hygiene Manager

NAME
TITLE

1. INTRODUCTION

This Air Monitoring Plan has been prepared by Bureau Veritas North America, Inc. (BVNA) on behalf of Arkema to provide details regarding ongoing air sampling and monitoring as a result of the ongoing emergency at the Crosby facility.

Following a review of impacted materials at the facility, Arkema provided information regarding potential contaminants and decomposition products to BVNA. BVNA reviewed this information and, in discussion with Arkema, prepared this plan as a framework for immediate sampling and monitoring deployment for expected agents as follows:

Agent	Potential Source or Reason for Inclusion in Plan
Volatile Organic Compounds, Total	Peroxide product thermal decomposition
Benzene	Product thermal decomposition
Particulates (PM 2.5)	Building materials combustion
Polycyclic Aromatic Hydrocarbons	Precautionary – no known source
Isocyanates (MDI, TDI)	Precautionary – due to building materials combustion
Sulfur Dioxide	Precautionary – no known impacted source

2. RESPONSIBILITIES

Karen Jones, CIH, BVNA is the lead on-scene Industrial Hygienist responsible for the fixed monitoring locations. Roving monitoring will be conducted by the Center for Toxicology and Environmental Health, LLC (CTEH) between the fixed monitoring locations. CTEH air monitoring results will be provided in a separate report.

3. AIR MONITORING PLAN

In order to protect workers and to safeguard public health, air monitoring will be conducted during response actions. This plan details the methods, frequencies and actions to be undertaken during response activities. The goal of this air monitoring program is to provide accurate and defensible data for the purpose of quantifying real-time as well as time-averaged concentrations of the selected agents.

3.1 Continuous Monitoring

Stationary Monitoring Point Positioning

A variety of sampling locations will be selected to model potential contaminant migration. In general, the sampling positions will represent locations upwind and downwind of the exclusion zone at the closest logistically attainable positons. Additional locations may be selected to ensure that shifting wind patterns do not result in migration of contaminants in such a way that contaminants are not adequately characterized. At the time of writing, a total of four (4) positions are anticipated:

- Upwind
- Directly Downwind
- Indirectly Downwind

If feasible, the sampling equipment will be placed inside of an enclosure and fitted with tubing to connect to an omniport to allow collection of air from all directions.

Mobile Monitoring

Stationary sampling will be supplemented as appropriate with mobile monitoring, which will continue to be taken at locations upwind and downwind of the exclusion zone at the closest logistically attainable positons. Mobile monitoring will be conducted with a subset of direct-read equipment feasible for transportation (anticipated to include PIDs only).

Sampling and Monitoring Methodology

A variety of sampling and analysis techniques are required to accomplish air monitoring for the selected compounds. Where possible, direct-read instruments have been identified to allow for rapid response to changing field conditions. Otherwise, laboratory methods have been identified.

Agent	Method	Analysis/Technique
Total VOCs	10.6 eV PID	Selected for wide variety of response agents. Used as a screening tool to identify potential decomposition products in alcohol and other volatile families in real time. Will be used to identify conditions for which a confirmatory grab sample shall be taken.
Speciated VOCs	EPA TO15	Selected for routine long-term (4h or 12h) whole air or concentration sampling as a speciation and confirmation of total VOCs identified by the 10.6 PID (if any).
Benzene	9.8 eV PID with speciation sorbent filter tube	Selected as a precautionary measure to identify and speciate benzene in real time.
Particulate Matter (PM 2.5)	Laser Aerosol Monitor	Selected for real-time data for particulates.
Polycyclic Aromatic Hydrocarbons (a.k.a. Polynuclear Aromatics)	An appropriate integrated method, recommended by the analytical laboratory.	Selected as a precautionary measure due to stakeholder concerns regarding combustion occurring on site. BVNA is not aware of any identified source of PAHs onsite.
Isocyanates	An appropriate integrated method, recommended by the analytical laboratory.	Selected as a precautionary measure due to concerns regarding building materials combustion byproducts. BVNA is not aware of any identified source of Isocyanates onsite.
Sulfur Dioxide	Electrochemical cell	Selected as a precautionary measure due to the presence of sulfur-containing products on site. BVNA understands at the time of authoring this document that there are no known impacts to sulfur-containing products on site. This real-time sensor is easily incorporated into the instrument also containing the 10.6 eV PID.

The above agents will be collected in accordance with the following anticipated operational conditions. Changes to operational conditions may result in revision to the Air Monitoring Plan.

Items identified for continuous use at stationary locations will be deployed in enclosures at anticipated points as close as feasible to the exclusion zone. GPS coordinates will be collected for each station. Stations may be moved due to changing exclusion zone topology or changing wind conditions. Each time a station is moved, new coordinates will be identified and the time of the move will be recorded.

Agent	Conditions
Total VOCs	Continuous use at stationary locations. Deployment of parallel units to mobile locations.
Speciated VOCs	Continuous use at stationary locations. Deployment of parallel units to mobile locations for contingencies which identify triggered sampling.
Benzene	Continuous use at stationary locations. Deployment of parallel units to mobile locations.
Particulate Matter (PM 2.5)	Continuous use at stationary locations. Not feasible for mobile locations.
PAHs	Continuous use at stationary locations.
Isocyanates	Triggered sampling only.
Sulfur Dioxide	Continuous use at stationary locations.

3.2 Triggered Sampling

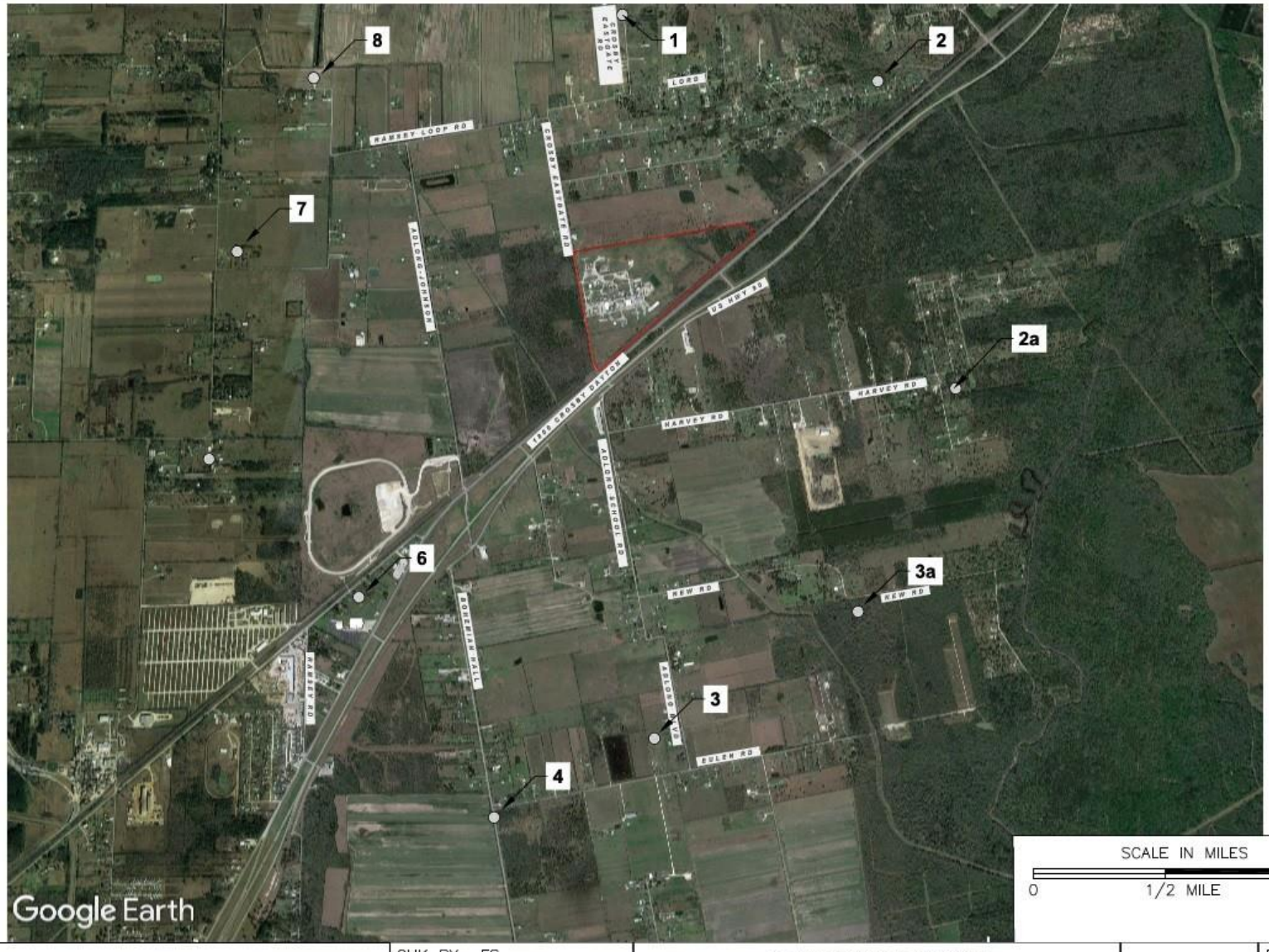
Due to the evolving situation at the facility and around the exclusion zone, additional samples may be collected if conditions change. The intent of these triggered samples are to better quantify specific conditions using confirmatory sampling techniques.

Triggered samples will be collected as identified below.

Event	Sample Collected	Rationale
Benzene readings exceed 13 ppm for 10 minutes.	TO15, 15-minute sampling period (or shortest sample period feasible)	This event is identified based upon 10% of the EPA AEGL-1 for Benzene.
Total VOC readings exceed 5 ppm for 10 minutes.	TO15, 15-minute sampling period (or shortest sample period feasible)	This event is identified based upon 10% of the EPA AEGL-1 for Cumene.
Confirmation or suspected combustion of polyurethane foam.	Isocyanates	In the event polyurethane foam is identified or suspected to be combusting, an isocyanates sample will be collected for the duration of the event.

APPENDIX A

Site Figure



LEGEND

SUBJECT PROPERTY BOUNDARY

(#) AIR SAMPLING POINTS

CHK BY	ES
DWN BY	SP
DATE	08/01/2017
SCALE	AS SHOWN
CAD NO.	0
PRJ NO.	02017-000555.00

AIR SAMPLING LOCATIONS
ARKEMA INC.
18000 CROSBY EASTGATE RD
CROSBY, TX 77532
SOURCE: GOOGLE EARTH 2017

FIGURE
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